

# Medley Farm Superfund Site



**EPA**  
Region IV

*Gaffney, South Carolina*

*May 1990*

## INTRODUCTION

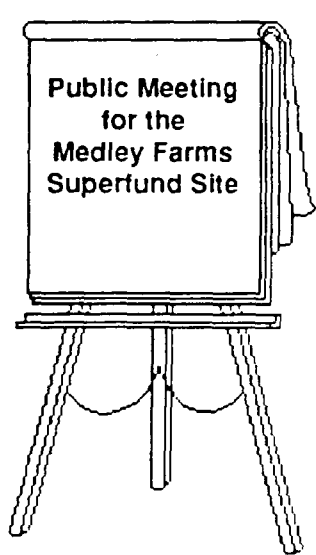
This fact sheet on the Medley Farm Superfund site near Gaffney, South Carolina, has been prepared by the Region IV Office of the U.S. Environmental Protection Agency (EPA) as part of its Superfund oversight responsibilities at the Medley Farm site. The purpose of this fact sheet is to inform interested citizens and local officials of the nature and status of EPA's activities at the site. This fact sheet provides a brief background and history of the site, addresses current activities at the site including the results of the Remedial Investigation (RI) Study, identifies ways in which the public may become more involved in the corrective process at the Medley Farm site, reviews the next steps in the Superfund remedial process for the site, and includes site maps, a glossary, and a list of acronyms.

Words highlighted in **bold print** are defined in the glossary on page 9 of this fact sheet. A list of acronyms appears on page 11.

## SITE BACKGROUND AND HISTORY

The Medley Farm **Superfund** site in Cherokee County, South Carolina, occupies approximately seven acres of a 61.9-acre tract of land owned by Mr. Ralph Medley. The site is located off Burnt Gin Road (Highway 72) about six miles south of the City of Gaffney. (See map on Page 2.) Land use in the vicinity of the site is primarily agricultural and light residential. Until the early 1970s, the Medley property was maintained as woods and pasture land. From approximately 1973 to 1978, several area textile, paint, and chemical manufacturing firms paid to dispose of their industrial wastes on the Medley property. The site was first documented in 1981 when a firm disposing of wastes at the site complied with one of the Superfund waste disposal notification clauses and reported its use of the Medley Farm site to EPA.

In May 1983, in response to a local citizen who witnessed the disposal of barrels on the Medley



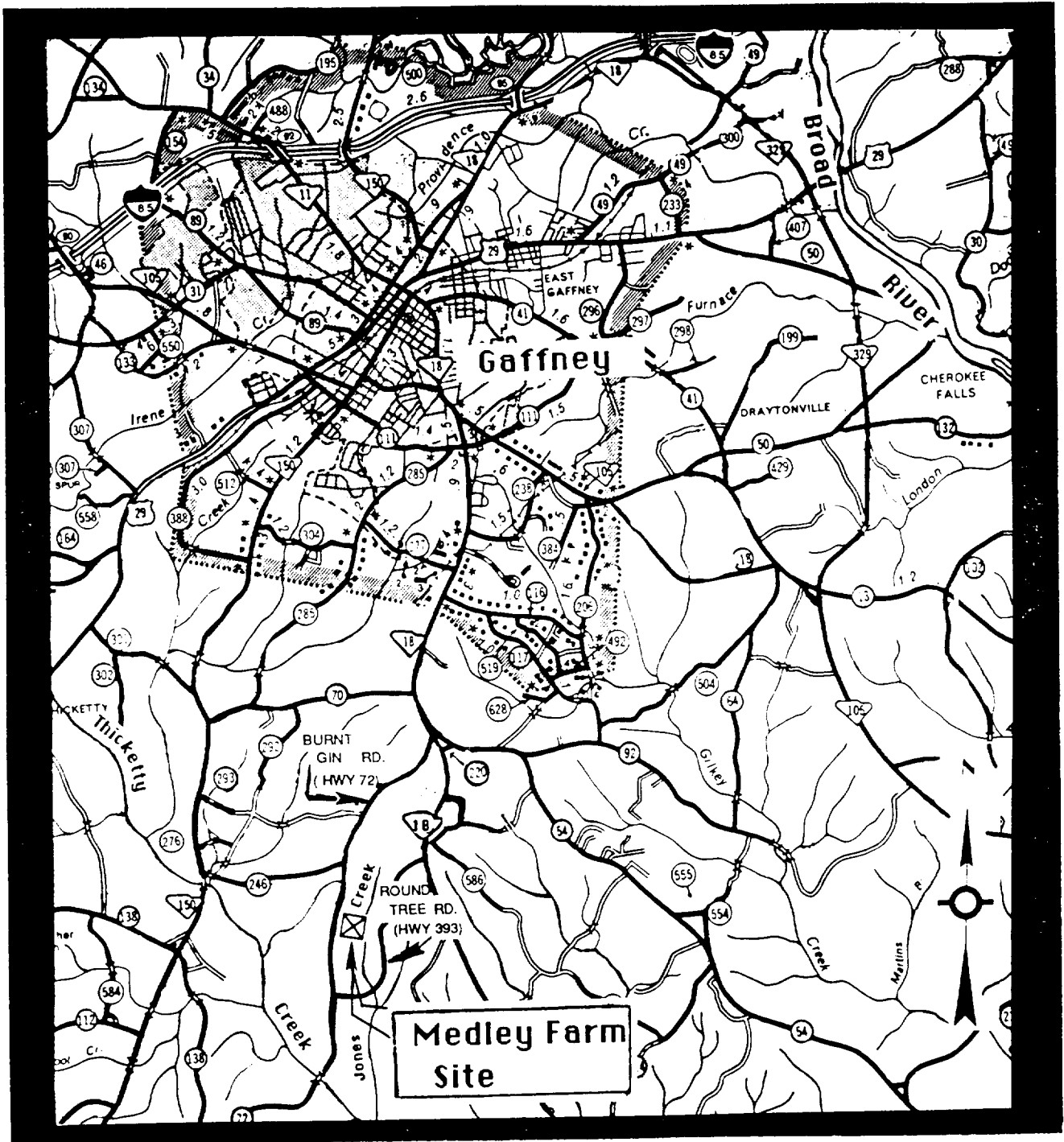
### Public Meeting on RI Findings

A public meeting will be held to present results of the Remedial Investigation for the Medley Farm Superfund site. The purpose of the meeting is to provide the community with an opportunity to discuss the site status with representatives from EPA and the South Carolina Department of Health and Environmental Control. Upcoming site activities will also be discussed.

Date: Thursday, May 24, 1990  
Time: 7:00 p.m.  
Place: Gaffney High School Cafeteria  
Address: 805 E. Frederick Street, Gaffney, SC  
(803) 489-2544

# MEDLEY FARM SITE LOCATION MAP

13 9 0002



Map Adapted By Booz, Allen & Hamilton from 1971 Map by the S.C. Department of Highways & Public Transportation

property, the South Carolina Department of Health and Environmental Control (DHEC) took samples at the site and notified the EPA of the presence of half-buried drums, many of which were leaking. That same month, EPA also investigated and sampled wastes, soil, and water at the site. In June, the site was evaluated using a process called the Hazard Ranking System (HRS) to determine possible Superfund action.

EPA performed an emergency removal operation in June and July 1983. During this operation, EPA removed a total of 5,383 fifty-five-gallon drums and fifteen-gallon pails of waste, 2,132 cubic yards of refuse and contaminated soil, and 70,000 gallons of water and sludge from 6 small waste lagoons on the site. The lagoon areas were then backfilled and graded. Testing of the solid and liquid waste materials removed from the property indicated that the primary chemicals of concern are **volatile organic compounds (VOCs)**. The Medley Farm site was proposed for addition to the **National Priority List (NPL)** in June 1986. The site was placed on the NPL in March 1990.

DHEC and EPA conducted several sampling studies on the Medley property from 1983 to 1984. These studies included the sampling of private wells in the site vicinity, a geological study, a more extensive **groundwater** sampling, and a preliminary **hydrogeologic** investigation. During this same time frame, EPA compliance staff also initiated investigations to identify individuals or firms responsible for waste disposal at the Medley Farm site. Over the next two and one-half years, EPA negotiated with several of the **potentially responsible parties (PRPs)**, parties potentially responsible for the contamination at the Medley Farm site.

In January 1988, EPA and five **PRPs** signed an Administrative Consent Order in which the companies agreed to carry out and fund the **Remedial Investigation (RI)/Feasibility Study (FS)** of the Medley Farm Site. The PRPs hired Sirrine Environmental Consultants, an environmental engineering firm in Greenville, South Carolina, to develop the

work plan and other supporting documents for the RI/FS. EPA approved Sirrine's RI/FS work plan in August 1988. The PRPs submitted the draft RI report to the Agency in March 1990.

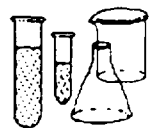
### WHAT IS A REMEDIAL INVESTIGATION?

A remedial investigation (RI) is an intensive study of a Superfund site. It is carried out by a team of health and environmental specialists such as hydrogeologists, engineers, and biologists to determine the exact nature of the hazardous wastes, the nature of threat, if any, that may be posed to human health or the environment, and the boundaries or extent of any contamination that is present at a site.

Typically, the RI report describes the type and extent of on-site and off-site contamination, the effects of contamination on surface water and ground water, and the degree of contamination in the soil. To achieve these findings, EPA personnel or the Potentially Responsible Parties' contractor, supervised by EPA, take samples of the soil and surface water at various locations at the site. Monitoring wells are installed and ground water is sampled.

Samples are sent to EPA-approved laboratories to be analyzed for various contaminants, including metals and organics. The area is also studied to determine whether or not the contaminants are moving from the disposal area, where they might go, and what sensitive areas they might reach. Based on this information, a risk or endangerment assessment is made, estimating the contaminants' potential impact on human health and the environment.

### RESULTS OF THE REMEDIAL INVESTIGATION



The primary objectives of the Medley Farm RI were to characterize the nature and extent of **residual chemicals** present at the Medley Farm site, if any, and to characterize the site hydrogeology and geology. The type of analyses included in the RI were

selected to characterize these factors to the extent required to evaluate potential risks, if any, to human health and the environment, and to evaluate alternatives for site remediation, if required. Toward this end, the RI analyzed three potential sources of contamination:

- Soils
- Groundwater
- **Surface water/stream sediment.**

Nine different sampling methods were used: **soil gas survey**, test pit excavation and soil sampling, **monitoring wells**, **soil borings**, **in-situ hydraulic conductivity testing**, **stream gauging**, fracture trace analysis and aerial photograph review, groundwater sampling, and surface water and stream sediment sampling. The site geologic and hydrogeologic conditions were also studied. The location of former drum and lagoon areas played a key role in determining the type and extent of tests conducted. This information is illustrated in the map on page 7. Further information about the sampling methodology is included in the RI. The data obtained from the RI will be used to evaluate risks associated with the site and to conduct a FS to evaluate options for site remediation if required.

## APPROACH TO REMEDIAL INVESTIGATION

The RI field investigations were conducted in two phases to allow for evaluation of data collected during initial characterization and for re-assessment of proposed sampling and analytical techniques. This section describes the objectives of and technologies used in each phase of the RI.

### Phase 1A

The objective of the RI Phase 1A at the Medley Farm site was to: investigate the potential presence and sources of contamination at the site; characterize the geology, hydrogeology and the horizontal extent of source or soil contamination found at the site; provide the initial assessment and characteriza-

tion of potential groundwater contamination; and develop a set of site-specific guidelines for future sampling and analyses. Toward this end, Sirrine Environmental Consultants performed the following activities during the initial phase:

- Conducted a soil gas survey to confirm selection of appropriate locations for determining the source of contamination
- Excavated ten test pits in and around suspected lagoon and drum storage areas for initial source characterization
- Installed seven groundwater monitoring wells to test for the presence and nature of any contamination in both the saprolite and bedrock aquifers
- Sampled groundwater of four wells to test for the presence of contamination
- Tested water pressure of three open-hole **bed-rock** wells to investigate the permeability of the rock mass at each bedrock well
- Compiled **Target Compound List (TCL)** and **Target Analyte List (TAL)** analyses of four groundwater samples and eight soil samples. TCL and TAL analyses include VOCs, **semi-volatile organic compounds (SVOCs)**, pesticides, **polychlorinated biphenyls (PCBs)**, and inorganic compounds.

### Phase 1B

The focus of the second phase of the Medley farm site RI was to build upon data collected during Phase 1A and gather additional data to support the assessment and feasibility of the **remedial alternatives**. Sirrine Environmental Consultants conducted the following evaluations:

- Drilled ten soil borings in and around confirmed source areas to further investigate

the vertical and horizontal extent of residual chemicals in the soil for additional source characterization and evaluation of background soil characteristics

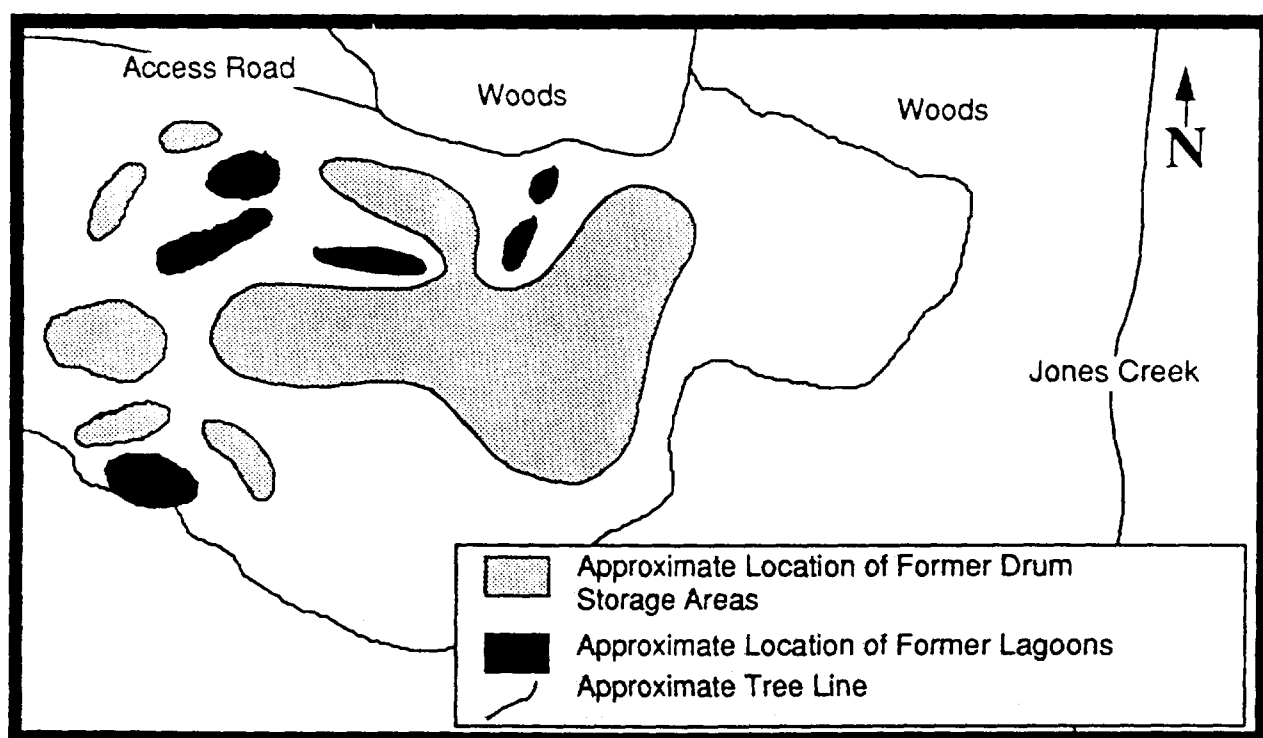
- Excavated six additional test pits to assess site conditions and identify the existence of lagoons
- Sampled surface water and stream sediment to evaluate the potential presence of residual chemicals
- Sampled the groundwater of all monitoring wells to identify potential impacts to ground water at the site

- Conducted water pressure and slug testing to further evaluate the hydraulic characteristics of the bedrock

- Analyzed seven groundwater samples, thirty-six soil samples, four stream sediment and four surface water samples for the list of indicator parameters developed during Phase 1A.

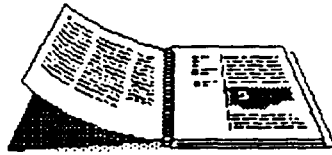
Additional information regarding the design and analytic components of these field activities and analyses are included in the information repository.

### Medley Farm Site Map of Former Drum and Lagoon Storage Areas



Map Adapted By Booz, Allen & Hamilton from Map by Sirrine Environmental Consultants.  
Source: NUS Report on Geophysical Study TDD No. F4-8307-03

## SUMMARY OF RI FINDINGS



### Geological Conditions

The bedrock underlying the Medley Farm site consists of a shallow saprolite layer and a deeper bedrock. The saprolite is relatively thick across the site, ranging from 50 to 70 feet near the former disposal area to 7 to 28 feet along Jones Creek. The saprolite layer consists predominantly of a silt with varying amounts of fine to coarse sand, clay, mica flakes, and quartz gravel. The bedrock consists primarily of gneiss and was predominantly hard.

### Hydrogeological Conditions

A dual aquifer system exists in the Piedmont Province and underlies some areas of the Medley Farm site. The shallow aquifer occurs in the saprolite beneath the water table conditions underlying the site and the deeper aquifer occurs in the bedrock. The shallow aquifer at the Medley Farm site is not a major aquifer and is believed to primarily serve as a storage media for groundwater. There is a chance that contaminants will move vertically, toward the bedrock aquifer immediately under the former waste disposal area. The surface topography and slant of the bedrock is to the southeast of the site. No surface water or stream sediment contamination was observed in Jones Creek, which is located to the east-southeast of the site. However, there is a potential for discharge of groundwater into Jones Creek, which may ultimately discharge into Thicketty Creek further downstream.

### Soils Analyses

Prior to all other RI subsurface investigations, a soil gas survey was conducted to finalize locations for test pits and soil borings. The locations of test pits and soil borings are illustrated in figure 6 of the RI. Test pits and soil borings were the primary methods by which the soil at the site was sampled. Analysis of the test pits show the presence of some residual chemicals (VOCs and SVOCs) in soil near the

surface. The residual source materials consist of thin, isolated pockets of **sludges** and debris located at former lagoon sites. Soil borings were completed to further investigate the vertical and horizontal extent of residual chemicals in the soil. VOCs were detected in all soil borings except the background soil boring located 350 feet from the suspected disposal site where VOC analysis was not performed. Inorganic chemicals were detected in soil samples, however they are within typical background levels. Data from soil borings agreed with test pit observations and analytical results which showed the highest concentration of VOCs in localized areas related to former lagoons and/or drum disposal areas. Both test pit and soil boring analyses confirmed that there appears to be no uniform vertical or horizontal distribution of the residual chemicals present in the soil.

### Groundwater Analyses

Groundwater sampling from both **saprolite** and **bedrock aquifer** monitoring wells showed the presence of VOCs only. No SVOCs, pesticides or PCBs were detected in the groundwater analyses. Further analyses were conducted through in-situ hydraulic testing, i.e., water pressure and slug testing, to evaluate the hydraulic characteristics of the bedrock underlying the Medley Farm site. Aerial photographs and topographic maps also were studied to identify probable groundwater flow directions and potential pathways for contaminant migration.

### Surface Water/Stream Sediments Analyses

Stream gauging was used to measure the possibility of groundwater discharge from the Medley Farm site to Jones Creek. Monitoring wells were drilled close to the creek to evaluate surface water level and flow measurements. Samples of the surface water and stream sediments from Jones Creek were evaluated for the potential presence of residual chemicals and to compare the quality of surface water and bottom sediments both upstream and downstream from the site. Sampling instruments did not detect the presence of VOCs or SVOCs in any of the surface water or stream sediment samples.

## CONCLUSIONS OF THE REMEDIAL INVESTIGATION

The following major conclusions are drawn from the results of the RI:

- Residual chemicals are present at the site in soils in the immediate vicinity of the disposal area. The residual chemicals detected in the soils consist primarily of VOCs and SVOCs. Currently, there is no overland movement/transport of residual chemicals away from the immediate disposal areas of the site.
- Residual chemicals are present in the groundwater of the saprolite and bedrock aquifers beneath the site. The only residual chemicals detected in groundwater at the site consist of VOCs. These residual chemicals were only detected immediately downgradient of the source area. Chemical analyses of groundwater samples collected from background wells (saprolite and bedrock) contained no residual chemicals.
- Residual chemicals detected in groundwater have not reached the closest perennial discharge area, Jones Creek (located to the southeast and east of the site). VOCs were not detected in monitoring wells installed immediately west of Jones Creek. No chemicals were detected in either the surface water or stream sediments samples collected from the creek. Therefore, no chemical migration to Jones Creek appears to have occurred.

Additional information about the RI findings and supporting documents are available at the information repository.

## NEXT STEPS

The RI phase of the RI/FS is near completion and will be made available for public review at the information repository. EPA will conduct a public meeting to discuss the results of the RI and discuss future plans at the Medley Farm site. (See Public

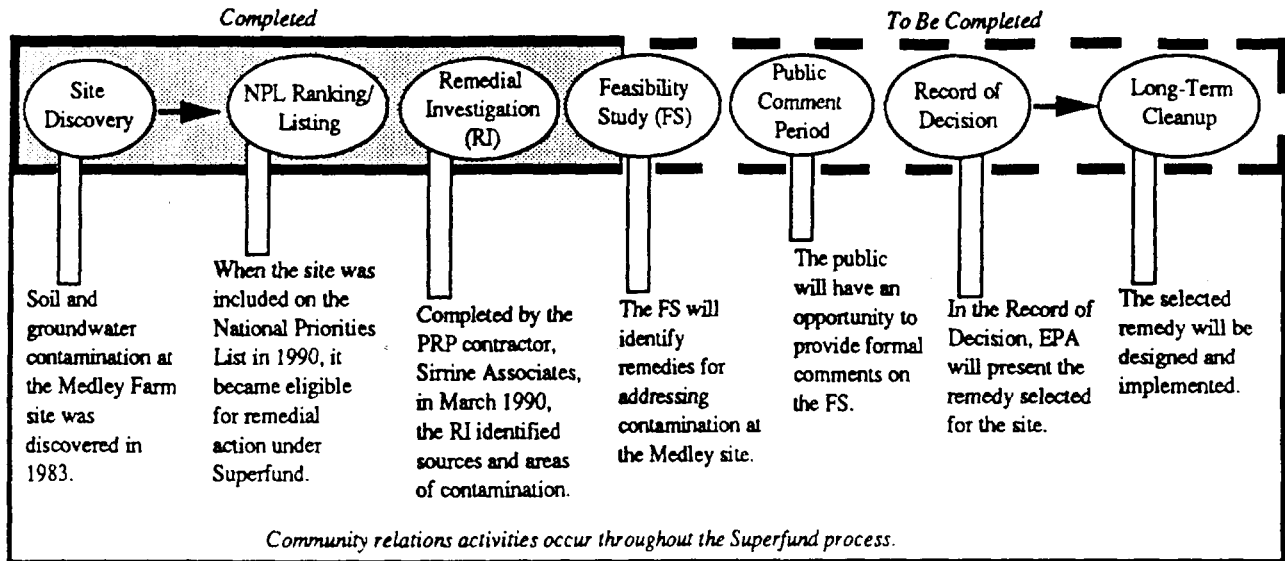
Meeting Notice on page 1.) The next step is a Feasibility Study (FS). The FS is a report that summarizes the development and analysis of remedial alternatives that EPA considers for the cleanup of Superfund sites. When the FS is complete, EPA will hold another public information meeting to present a summary of the entire RI/FS process, including the results of the FS, and explain the proposed plan to remedy contamination at the site. During this time, EPA will also announce a 30-day comment period during which citizens can submit written comments on the remedial alternatives considered in the RI/FS study and EPA's proposed plan. The meeting to discuss the completed RI/FS and proposed plan will be recorded to assist EPA in preparing a **Responsiveness Summary**, a report that summarizes community comments and concerns and EPA responses. After the comment period, EPA will summarize the decision process and the selected remedy in a document called a **Record of Decision (ROD)**. The ROD will include the Responsiveness Summary and will be submitted to the EPA Regional Administrator for approval. Upon approval, the design of the remedy will be developed and the implementation of the remedy can begin.

## FURTHER OPPORTUNITIES FOR PUBLIC INVOLVEMENT

EPA has developed a community relations program under Superfund to respond to citizens' concerns and needs for information and to enable residents and officials of a site community to participate in decision-making. Public involvement activities that are undertaken at sites range from fact sheets such as this, to formal public meeting and public comment periods.

Keeping the public informed is an important part of EPA's work at a site. In order to allow the public access to information they can understand and use, EPA establishes an information repository near the site. An information repository contains documents such as the Community Relations Plan, fact sheets, and other documents about the site. The informa-

# MEDLEY FARM SITE SUPERFUND PROCESS

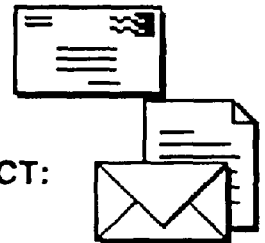


tion repository for the Medley Farm site is located at the Cherokee County Public Library (the address is given below). The information repository is a

useful resource for interested parties to obtain information about the Medley Farm Superfund site or about the Superfund program in general.



**FOR FURTHER INFORMATION ABOUT THIS SITE, CONTACT:**



**Mr. Jon Bornholm**  
Remedial Project Manager  
U.S. Environmental Protection Agency  
Region IV  
345 Courtland Street, N.E.  
Atlanta, GA 30365  
(404) 347-7791

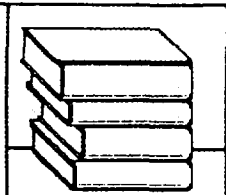
**Mr. Michael Henderson**  
Community Relations Coordinator  
U.S. Environmental Protection Agency  
Region IV  
345 Courtland Street, N.E.  
Atlanta, GA 30365  
(404) 347-3004

**Mr. Keith Lindler**  
Project Manager  
Bureau of Solid and Hazardous Waste Management  
South Carolina Department of Health and  
Environmental Control  
2600 Bull Street  
Columbia, SC 29201  
(803) 734-5200

**Mr. Thom Berry**  
Director, Division of Media Relations  
South Carolina Department of Health and  
Environmental Control  
2600 Bull Street  
Columbia, SC 29201  
(803) 734-5038



## GLOSSARY



**Aquifer:** A layer of rock or soil below the ground surface that can supply usable quantities of groundwater to wells and springs. Aquifers can be a source of drinking water and provide water for other uses as well.

**Bedrock:** The layer of rock located below the glacially deposited soil and rock under the ground's surface. Bedrock can be either solid or fractured (cracked); fractured bedrock can support aquifers.

**Comprehensive Environmental Response Compensation and Liability Act (CERCLA):** Also known as Superfund, this law authorizes the federal government to respond directly to releases or potential releases of hazardous substances that may endanger public health or welfare or the environment. The EPA manages the Superfund program.

**Downgradient:** Down the slope or groundwater from contamination.

**Feasibility Study (FS):** A feasibility study is a report that summarizes the development and analysis of remedial alternatives that EPA considers for the cleanup of Superfund sites.

**Gneiss:** Granite-like rock made up light or dark bands.

**Groundwater:** The water beneath the earth's surface that flows through soil and rock openings and often serves as a principle source of drinking water.

**Hydrogeology:** The study of groundwater occurrence and movement in earthen materials.

**In-situ:** In its original place.

**Monitoring Wells:** Special wells drilled at specific locations on or off a hazardous waste site where groundwater can be sampled at selected depths and studied to determine such things as the direction in which groundwater flows and the types and amounts of contaminants present.

**National Priority List (NPL):** EPA's list of top priority hazardous waste sites that are eligible to receive federal funds for investigation and cleanup under the Superfund program.

**Polychlorinated Biphenyls (PCBs):** A family of organic compounds used in electrical transformers, lubricants, and adhesives. PCBs are extremely persistent in the environment and do not break down into less harmful substances. EPA banned the use of PCBs in 1979 because long-term exposure to PCBs can cause liver damage and other adverse human health effects.

**Potentially Responsible Party (PRP):** Any individual(s) or company(s) (such as owners, operators, transporters, or generators) that is potentially responsible for, or contributing to, the contamination problems at a Superfund site. Whenever possible, EPA requires PRPs, through administrative and legal actions, to clean up hazardous waste site that they have contaminated.

**Record of Decision (ROD):** A public document that explains which cleanup alternative(s) will be used at NPL sites where, under CERCLA, Trust Funds pay for the cleanup

**Remedial Alternatives:** The technology, or combination of technologies, used by EPA in treating, containing, or controlling contamination at a Superfund site. A remedial alternative usually addresses both soil and sediments, and groundwater contamination.

**Remedial Investigation:** The first stages of the Superfund remedial process. The Remedial Investigation determines the extent and composition of contamination at a hazardous waste site.

**Residual Chemicals:** The amount of chemicals remaining in the environment after a natural or technological process has taken place, e.g., the VOCs remaining in the soil at locations of former drum or lagoon storage areas at the Medley Farm site.

**GLOSSARY (Continued)**

**Responsiveness Summary:** A summary of oral and/or written public comments received by EPA throughout the entire remedial process, and the Agency's replies to these comments. The responsiveness summary includes EPA's responses to public concerns in a variety of forms, such as fact sheets, information repositories, public meetings, letters, telephone calls, and briefings. This summary is especially valuable during the Record of Decision phase at a site on the National Priorities List because it highlights community concerns for EPA decision-makers.

**Saprolite:** A relatively thick overburden on the bedrock typical in the Piedmont province where the Medley Farm site is located. The overburden, termed saprolite, is a layer of decomposed bedrock formed in place by chemical and physical weathering.

**Sediments:** Materials that settle to the bottom of a stream, lake, wetland area, or other body of water.

**Semi-Volatile Organic Compounds (SVOCs):** Carbon-containing chemical compounds that, at a relatively low temperature, fluctuate between a vapor state (a gas) and a liquid state.

**Sludge:** A thick, heavy, mud-like mixture of solids and liquids often resulting from the settling of solids from a liquid.

**Soil Boring:** A technique used for soil testing that involves drilling a hollow cylinder into the earth at various depths to study the extent of soil contamination.

**Soil Gas Survey:** A technique used to provide data on sources of chemicals within underlying soils and

groundwater. Samples are collected by driving a hollow probe into the ground and extracting a small amount of gas. The samples are analyzed for VOCs.

**Stream Gauging:** A technique used to determine a segmented cross-section of Jones Creek at several locations. Measurements are taken by installing steel posts on either side of the Creek, stretching a cable between them, and taking measurements of distance from each measuring point to the water level, stream bottom, and/or ground surface. In conjunction with the water flow velocity, data such as total area and discharge rate can be determined.

**Superfund:** The common name for the Comprehensive Environmental Recovery and Liability Act. (See definition above.)

**Surface Water:** Bodies of water on the earth's surface that are exposed to the air, such as streams, rivers, lakes, and oceans.

**Target Analyte List (TAL):** Part of a list of indicator parameters, or guidelines, approved by EPA, and used at the Medley Farm site for analysis of inorganic levels in soil, groundwater, and surface water samples.

**Target Compound List (TCL):** Part of a list of indicator parameters, or guidelines, approved by EPA, and used at the Medley Farm site for analysis of VOCs, SVOCs, and Pesticides/PCBs levels in soil, groundwater, and surface water samples.

**Volatile Organic Chemicals (VOCs):** A subgroup of organic (i.e., carbon-containing) chemicals characterized by their greater tendency to evaporate into the air from water or soil.

**LIST OF ACRONYMS**

<b>CERCLA</b>	Comprehensive Environmental Response, Compensation and Liability Act of 1980	<b>NPL</b>	National Priority List
<b>DHEC</b>	(South Carolina) Department of Health and Environmental Control	<b>PCB</b>	Polychlorinated biphenyl
<b>EPA</b>	United States Environmental Protection Agency	<b>RI</b>	Remedial Investigation
<b>FS</b>	Feasibility Study	<b>ROD</b>	Record of Decision
<b>HRS</b>	Hazard Ranking System	<b>SARA</b>	Superfund Amendments and Reauthorization Act of 1986
		<b>SVOCs</b>	Semi-Volatile Organic Compounds
		<b>TAL</b>	Target Analyte List
		<b>TCL</b>	Target Compound List
		<b>VOCs</b>	Volatile Organic Chemicals

**DOCUMENTS REGARDING THIS SITE CAN BE REVIEWED AT  
THE FOLLOWING INFORMATION REPOSITORY**

Cherokee County Public Library  
300 E. Rutledge Street  
Gaffney, SC 29340  
(803) 487-2711

Hours: 10-8 Monday and Tuesday  
10-6 Wednesday through Friday  
10-4 Saturday  
Copying facilities available - \$.15/page  
Contact: Mr. Doug Clore, Director

**MAILING LIST ADDITIONS**

To be placed on the mailing list to receive information regarding the Medley Farm Superfund Site, please complete this form and mail to:

Mr. Michael Henderson, Office of Public Affairs; U.S. EPA, Region IV  
345 Courtland Street, NE, Atlanta, GA 30365

Name \_\_\_\_\_  
Address \_\_\_\_\_  
Affiliation \_\_\_\_\_  
Phone \_\_\_\_\_